



Groovy Garbage: Making Music



Instructors: Don't forget to make an Achievory account for each student! [Make your account for the Achievory in English](#) or [Make your Account for the Achievory in Spanish](#)

Objective: Students will design, test, and modify their own musical instrument(s) and then play together with other students. By strumming and plucking guitars, shaking maracas and banging drums, students experience the science of sound waves in action. They'll practice modifying pitch using straws. By prototyping different instruments, children also have the opportunity to practice their creative problem-solving skills and invent new ways to produce music.



Grade Span: 5-8, resources and suggestions are included for modifications for additional grades.

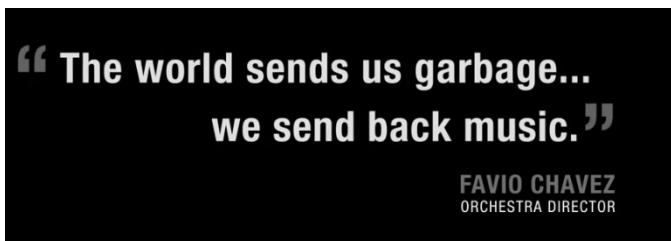
Subjects: STEM, Music

Lesson Introduction: Build background by watching a read-aloud of a book from the Student Portal Resource Storyline Online, such as [Never Play Music Right Next to the Zoo](#) written (and read) by John Lithgow.

Before watching, begin the activity using the questions in [the Teacher Guide](#). Introduce the title, Never Play Music Right Next to the Zoo. Why might it not be a good idea to play music next to the zoo? What do you think might happen in this story?



Have students watch and discuss [the trailer](#) for the documentary [Landfillharmonic](#). The recycled Orchestra of Cateura is made of young



musicians who live in the community surrounding the Cateura landfill, the main and largest landfill in Asunción, the capital of Paraguay. Explore more [on their site](#).

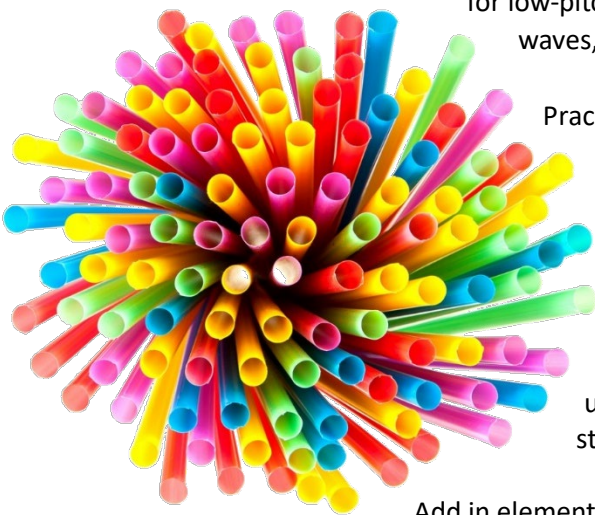
Lesson: Now it's time for students to get their groove on by creating their own DIY instrument! Use the Achievery lesson [Homemade Musical Instruments I](#). Homemade Music Instruments I is a creative activity that invites students to explore found objects and materials, combine them in crafty ways, and explore sound. The first video invites you to create your own drum. The second video shows you how to make a shaker. The third video teaches you how to make your tambourine. Keep your collection of instruments. You will need them in later video lessons when you create your own music compositions performed with your homemade instruments.



Additional Resources: Include ideas from The Inventor's Hall of Fame activity [Be Instrumental](#) (K-3). Explore sound and bring music into the classroom by playing a variety of songs. Tell children that high-pitched sounds, such as a mouse squeaking, are fast sound waves and low-pitched sounds, like a deep lion's roar, are slow waves. You can demonstrate the difference in sound waves by moving your arms like ocean waves and varying the speed of your movement. Next, have everyone stand up and perform interpretive dances inspired by the types of sound waves they hear in a song. Try these suggestions: walk fast with hands in the air to represent high-pitched sounds, crawl or duck-walk slowly for low-pitched sounds, walk quickly or run to demonstrate fast sound waves, or move in slow motion for slow sound waves.

Practice pitches with [Do-Re-Mi with Straws](#) from Science Buddies.

Have you ever wondered how a musical instrument produces the beautiful sounds that it does? To make a certain note, the instrument has to make a certain sound wave. Depending on the instrument, the sound wave that is made can be affected by changing the length of part of the instrument, such as the strings in a piano or on a guitar, or a trombone's air column. In this science activity, you will make your own musical instruments using drinking straws and explore how changing the length of the straws changes the notes that they produce.



Add in elements from [Homemade Musical Instruments II](#): Homemade Music Instruments II is a creative activity that invites Students to explore found objects and materials, combine them in crafty ways, and explore sound. The first video invites you to create a harmonica. The second video shows you how to make and play a didgeridoo. Eventually, all the instruments are performed together.

Incorporate aspects of the Student Portal Resource PBS Kids Design Squad Challenge: [Build an Instrument](#).

Take it farther! Expand on this lesson with additional lesson plans and activities such as:



Watch this! [How This Guy Makes His Own Novelty Instruments](#): Len Solomon has been making incredible instruments out of random objects for over 30 years. He's performed as a one-man-band all over the world, and The Majestic Bellowphone is perhaps his DIY novelty masterpiece.

WIRED



Does music making perk up your ears? Explore more with the Achievery's [Music Career Exploration](#) (Gr 6-12) lesson. Do you love music? In this lesson, you'll explore your interest in music and learn about five different life paths you could take that connect to music in some way.

Learn how to build a working piano with code! Use the Achievery lesson [Coding a Digital Piano](#) (Gr 6-8) and build and code a working piano in Scratch. Once they've built it have students use the Achievery lesson [Notation & Rhythm](#) (Gr 6-8) to learn how to measure pitch, notate rhythm, and create sounds and music in Scratch.

Was that fun? Then use the Achievery lesson [Composing Music](#) and learn more about notation and rhythm. Composing Music is something we all can do. In this two-part video lesson, students learn about music notation and create a musical language using a grid instead of staff notation. The best part is that they get to perform their music with their friends.

[The String Family](#): Students tap into the power of music as they learn to recognize the voices in the string family, find out that pitch doesn't always involve a baseball, learn just what sheep, horsehair, rattlesnake tails, and violins have to do with each other, and strum sweet sounds from their own washtub bass.

[I Bet You Think this Song is About You](#): Students struggle with vocabulary but seem to learn the lyrics to the latest song effortlessly. If only there was a way to harness that power! There is, through music and lyrics students can practice a wide variety of language skills in a fun way. We provide an easy formula for bringing music into the classroom and getting that tricky vocabulary into their brains.



[Singing Science: How High and Low Can Your Voice Go?](#) Do you enjoy getting together with family and friends to sing familiar holiday songs? Have you ever wondered what the highest note is that you can sing? How about the lowest? Or what about other people – do you think males and



females can reach the same notes? How about children and adults? In this “note”-worth science activity, you’ll get to answer some of these questions!

Game Time: Play Musical Games on [PBS Kids](#) and [Classics for Kids](#).